Christiana Borough Bridge
Bridge Street
Over Pennsylvania Railroad
Christiana Borough
Lancaster County
Pennsylvania

HAER No. PA-88



PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

REDUCED COPIES OF MEASURED DRAWING

HISTORIC AMERICAN ENGINEERING RECORD
MID-ATLANTIC REGION NATIONAL PARK SERVICE
DEPARTMENT OF THE INTERIOR
PHILADELPHIA, PENNSYLVANIA 19106

# HISTORIC AMERICAN ENGINEERING RECORD

## Christiana Borough Bridge

HAER No. PA-88

| | |
|---|---|
| Location: | Bridge Street at Pennsylvania Railroad<br>Christiana Borough, Lancaster County, Pennsylvania |
| Date of Construction: | 1893-1895; modifications in 1907 to accommodate trolley lines; catenary attachments for electric lines and traffic and pedestrian protection screens added in 1937 when railroad electrified; in 1952 repairs made to structural steel. |
| Present Owner: | Pennsylvania Department of Transportation |
| Present Use: | Pedestrian crossing |
| Significance: | The Christiana Borough Bridge is a rare survivor of the Whipple truss bridge structure with wrought iron Phoenix columns. Built in 1893-95 by the Pennsylvania Railroad during a period of railroad expansion, it replaced a timber pony truss bridge. As originally designed, the truss was intended to carry heavy railway loads. In this instance, however, because the bridge was built to carry highway traffic over the railroad, the design was modified to carry a lighter load. |
| Project Information: | The replacement of the Christiana Borough Bridge and the rerouting of Legal Route 344 through Christiana Borough is to be funded by the Federal Highway Commission. Under Section 106 of the National Historic Preservation Act of 1966, mitigative documentation was undertaken for the Pennsylvania Department of Transportation by Macomber Associates, Incorporated in May 1983. |
| Transmitted by: | Jean P. Yearby, HAER, 1985 |

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## I. Introduction

The Christiana Bridge, built in 1893 to carry Bridge Street over the Pennsylvania Railroad main line, is a rare survivor of a typical wrought iron structure of its time. In conjunction with the proposed replacement of the structure with a modern bridge, this document has been prepared to record the history of the bridge.

## II. The Pennsylvania Railroad and the Growth of Christiana

In the year 1834, a significant change in the mode of travel through Pennsylvania occurred when the Pennsylania Canal Commissioners opened the Philadelphia and Columbia Railroad and the Allegheny Portage Railroad.[1] Travel through the state of Pennsylvania prior to this time had been accomplished mainly by horse and carriage over land, and by boat or raft over water. The railroads, in coordination with the canal and turnpike systems of the state, provided a much-needed transportation connection for the eastern and western regions of Pennsylvania.

The opening of the railroads signified not only a new era of transportation, but also a new dimension in engineering - bridge design. The emergence of new bridge technology, however, did not occur simultaneously with the opening of the first railroads, but developed as changes in the rolling stock required more sophisticated structures. In the early days of the railroad, timber bridges were used to a great extent, and they were adequate to carry the trains of the day. In fact, the early railroad trains were light enough in weight that the same types of timber bridges used in turnpike construction were also used to handle railroad crossings.[2] Therefore, the majority of the first railroad line was completed using bridge technology from the turnpike era.

When the Philadelphia and Columbia Railroad was opened, some far-seeing citizens of the Commonwealth of Pennsylvania began to construct new enterprises along its route. Several new communities arose as a result, including Christiana in Sadsbury Township, Lancaster County. While the route was being constructed, William Noble, who had already built a wheelwright shop, a smithy, various mills powered by water, and a woolen factory along the Octorara Creek, now added a foundry, a machine shop, and a waterwheel house in close proximity to the railroad line. Soon after the line was opened, he built a warehouse at a place later called North Bend.[3] In 1846, S. L. Denney erected and began business in what became the Christiana Machine Shop.[4] The machine shop became a prominent business of the area and helped Christiana begin its move to assert itself as a leader in eastern Lancaster County.

In the mid-nineteenth century, the railroads experienced a change in technology, as timber bridges were no longer sufficient in strength to carry the trains of the day. The increased weight of the rolling stock of the railroads, in conjunction with the ever-present danger of fire from locomotive sparks, spelled the end of the great timber bridge era.[5] Iron bridges came into prominence, as a new technology was developed by applying mathematics to the computation of stresses in bridges. Foremost among the early technologists were Squire Whipple and Herman Haupt, who published their separate works on guidelines for the truss analysis of bridges in 1847 and 1851, respectively.[6] The development of iron bridges was not without setbacks, however, such as the collapse in 1850 of a metal bridge on the New York and Erie Railroad while a train was passing over it.[7] This setback slowed the use of metal bridges in comparison with timber bridges, but within a few years they were being used with regularity again.

The progress of metal bridges was enhanced in the mid-nineteenth century through the work of many inventive bridge builders who developed new truss systems for bridges. During this time, Wendell Bollman, Thomas Pratt, Squire Whipple, Albert Fink, and James Warren all developed the trusses that bear their names. The most common of these truss forms on the railroads of the East were the Pratt, Bollman, and Whipple trusses. The Pratt truss, patented in 1844, was widely used between 1860 and 1875. Bollman, an engineer on the B & O Railroad, patented his suspension truss in 1852, and it was used almost exclusively on the B & O lines during the period from 1850 to 1870. The most frequently used iron truss up until 1885, however, was the Whipple truss, patented in 1847 by Squire Whipple.[8]

The Whipple truss had the unique characteristic that the diagonal members crossed two panels rather than one, and sloped downward in opposite directions from each end to the center. The top chord and posts were hollow cylinders with diagonal rods and bottom chord eye bars. This truss had the greatest overall strength of the various long-span trusses developed between 1850 and 1960 and was, therefore, widely used by the railroads between 1865 and 1885.[9]

To meet the demand for the Whipple truss, many fabricating companies were established which sold bridge members that could be erected by local contractors. The most widely used column was the Phoenix column, patented in 1862 by Clark, Reeves & Company and manufactured by the company's successor, the Phoenix Bridge Company of Phoenixville, Pennsylvania. Only a few bridges built with Phoenix columns survive.[10]

The competition among fabricators, however, led to problems:

> The constant pressure to outsell and outproduce competitors led to shoddy practices, carelessness, and sometimes, deliberate dishonesty. Most bridges arrived on their sites as a bundle of prefabricated parts, and they were put together by untrained laborers.... There are many cases of bridges with mismatched parts or where essential pieces, belts, and pins were actually missing; such mistakes only being discovered later when the bridges were dismantled... The sloppy approach to design and construction pervaded much of the fabricating industry. Thus came a series of disasters comparable to those involving wooden bridges decades earlier. In the 1870s and 1880s more than two hundred iron bridges failed. The situation became so bad and the notoriety so great that many railroads reverted to stone masonry.[11]

The Pennsylvania Railroad undertook a bridge replacement program, substituting stone arch bridges for its wrought-iron structures. The metal bridges were frequently used for other purposes, such as highway crossings over the tracks.[12]

During the conversion of structural materials, the cast iron and wrought iron industries gained in importance to the railroads. Cast iron members were being used for compression and wrought iron for tension design due to their respective high compressive and tensile strengths. Thus, the railroad had incorporated the industrial progress of the country into their planning process in terms of bridge technology. Along with the advances of technology by the railroads, the communities built around the railroads had become more industrialized, including the borough of Christiana.

By 1880, the population of Christiana had grown to an estimated 800, and the town included several significant manufacturing operations. Chief among these were the Christiana Machine Company (the successor to William Nobel's foundry), a carriage factory, and a planing mill.[13]

The railroad was particularly important to the fortunes of the Christiana Machine Company, which first shipped various kinds of agricultural implements, and then, after 1868, increasingly specialized in the manufacture of turbine wheels and associated power transmission equipment. In 1878, Edward Broomell, one of the owners of the company, wrote to the Pennsylvania Railroad Company to ask that a crane be installed at the Christiana Station to handle the company's shipments.[14]

Through the decade of the 1880s, Christiana continued to develop, as it attained borough status. The Christiana Library Association was founded in 1881, the National Bank of Christiana in 1882, and the town newspaper, The Christiana Ledger, was begin in 1883, all of which were significant contributions to the borough's development. By 1890, the town was well established as the metropolis of eastern Lancaster County.[15]

III. The New Bridge at Christiana

The Pennsylvania Railroad Company, during the 1880s and 1890s, began a series of improvements on the Philadelphia Division main line west of Ardmore. The laying of third and fourth tracks between Philadelphia and Harrisburg was completed, changes in alignment were made to reduce the curvature of the track and to reduce grades, and timber bridges were replaced with iron or stone structures.[16] Forty-eight miles of track were relocated, saving 2.25 miles in distance and 3,239 degrees of curvature. Included in these improvements was the section of the line from North Bend in Christiana to the next station to the west, Gap.[17]

The proposed curvature improvement in the Christiana segment of the line involved a shift of the track approximately 150 feet to the north.[18] This shift changed the point of intersection with Bridge Street, necessitating a new structure to carry traffic over the railroad line. The new bridge would have to be long enough to cross the proposed four-track line and of sufficient strength to carry any increased traffic loading.

The bridge selected to satisfy these requirements was a 138-foot single-span, wrought-iron truss bridge that had been used to carry the Philadelphia, Wilmington and Baltimore Railroad over White Clay Creek near Wilmington, Delaware. The "red bridge," as it was called by the local residents of Christiana, had originally been constructed in 1874 as a Whipple truss with Phoenix members. The bridge was built at the Wilmington location by Clarke, Reeves and Company, according to Order No. 128.[19] Clarke, Reeves and Company was the predecessor to the Phoenix Steel Company and obtained the original patent for the Phoenix column by Samuel Reeves' design on Junbe 17, 1862.[20]

The bridge over White Clay Creek was designed to carry the railroad and, therefore, needed extra reinforcement. When the bridge plans were revised to adapt the bridge to its new use as a high crossing, these requirements were omitted:

> These floor beams were reinforced by added 12" beams under the original beams. Omit extra beams in
>
> arrangement for Christiana... Omit strut and truss rods at Christiana.[21]

In addition, the span length was shortened to 96 feet to cross the railroad. The plan for the bridge at Christiana was approved by the Pennsylvania Railroad's Chief Engineer, William H. Brown, on January 20, 1893.[22]

The construction of the bridge was undertaken by the railroad, beginning in 1893. The first step was the acquisition of right-of-way for the new route of the track and for the bridge itself. The Pennsylvania Railroad Company purchased several parcels of land in Christiana through eleven deeds executed between 1890 and 1896. (See Appendix A).[23] Other land was acquired for the new route in Sadsbury Township outside of the borough. The amounts paid by the company varied widely, from as little as $37.50 to as much as $3,500. A common clause in many of these deeds was the requirement that the seller, not the company, construct and maintain a fence on the line between the land sold to the company and the seller's remaining land.[24] The grantors also waived any damage caused by construction of "a railroad, tracks, sidings, or appurtenances upon or over said...land...".[25]

The new bridge is mentioned in two transactions. In a deed dated October 11, 1893, William P. Brinton and Mary C. Brinton sold 74/1000 acre to the railroad for $37.50. The seller discharged the company from any claim for damages "by reason of the construction of embankments for approaches to an overhead Bridge over the said Railroad on the line of the said public road which crosses the railroad...."[26] A similar clause is found in the deed made by Mary B. Brinton, widow of Charles E. Brinton, conveying 13/1000 acre to the railroad for $75.00.[27]

The general construction plan for the new bridge appears to have been staged so that no shutdown in railroad facilities would occur. While the train traffic continued on the existing alignment, the cut was made for the new line. The new structure was built, and the track was then laid under the newly constructed bridge. Following the completion of the work, traffic was transferred to the new line; thus no interruption of railway traffic was necessary. This process can be documented by photographs of the site taken during construction.

The cut of the new track was made to eliminate a sharp curve as the railroad left North Bend. The distance saved by the relocation of the line was 0.009 mile and 28°59' of curvature was eliminated.[28] To make room for the proposed fourth track, a brick freight warehouse was moved 40 feet to the east.[29]

Construction began with the roadway approaches on each side of the bridge. The existing pony truss timber bridge had been aligned at a 90 degree angle to the railroad tracks rather than aligned with Bridge Street. The new bridge, however, was to be aligned with Bridge Street and skewed to the railroad accordingly. The approach

gradework was begun, and masonry abutments were then constructed of cut stone block.

The construction of the bridge proper began with the erection of temporary supports. The support for the iron bridge was based on two components, the primary of which was a timber falsework that was constructed directly below the bridge site on the finished grade for the new track. The track, however, was not yet in place. The second temporary support was a cable suspension system that appears to have been used as an additional support for the top chord members of the bridge. With these two support components, the iron members were assembled to form the Whipple truss superstructure. The initial deck surface of the structure was timber.

The final steps were the construction of the embankments and the regrading of the approaches on Bridge Street. After the construction of the bridge was completed, the track was installed under the newly built structure and the new line was opened. The Pennsylvania Railroad Company in its Annual Report for 1895 stated that the fourth-track system had been completed between Atglen and Gap--a stretch that included Christiana.[30]

## IV. Engineering Description

The structure is a Whipple truss constructed of wrought iron and cast iron elements. The predominant features of the truss are the use of Phoenix columns; a multiple web system of diagonal members which cross two panels rather than one; and the existence of the ornamental details at the portal. The Phoenix columns are rolled wrought iron compression members composed of curved flanged segments riveted together to form a hollow cylindrical column. Another noteworthy feature of the bridge is that the truss was originally designed for heavy railroad loads and subsequently used for comparatively light highway loads at Christiana. Other features of this truss are common to metal truss bridges and are discussed below.

The portion of the structure designed for highway loadings is the bridge deck, including flooring and beams. The remaining iron portions of the structure were designed for railroad loadings.

The flooring is supported by timber beams spanning between pairs of iron floor beams. The floor beams and the remaining portions of the iron bridge make it evident that the bridge was designed for railroad loadings.

The floor beams carry the loads to the trusses through a system of hanger plates, rods, and pins. The pins supporting the hanger rods also connect the diagonal members, the bottom chord eye bars, and the vertical Phoenix columns.

In the multiple web system of the truss, there are two types of diagonals: flat bar diagonals and round bar diagonals called counters. The flat bars are wrought iron eye bar tension members designed to carry the weight of the structure and live loads on the deck. The counters are wrought iron tension members designed to carry live loads only. They are equipped with threaded connections near the pins which allow for adjustments during the life of the structure. In the multiple web system, the diagonals and counters intersect and are nested in a bracket which is attached to the Phoenix columns. The bracket maintains the position of the diagonals and reduces vibration as live loads cross the structure.

The bottom chord eye bars are wrought iron tension members which transmit horizontal components of the loads developed by the diagonals to the end bearings of the truss. The load is transmitted from the diagonal to the eye bar by a pin. Also connected at the pin are the Phoenix columns, which are wrought iron compression members that transmit the vertical components of the loads developed by diagonals. The top chord Phoenix sections are wrought iron compression members which transmit the opposing horizontal components of the diagonals to the end bearings, also through load transfer at the pins.

There are two types of end bearings on the structure: fixed bearings and expansion bearings. The bearings at the south end of the truss are the fixed bearings. The end post (Phoenix section) is fitted with a bearing shoe which rests on a plate setting on the cut stone masonry abutment. The expansion bearings at the north end of the truss are composed of rollers and plates. The bearing shoe on the end post rests on rollers nested in an iron casting which rests on a plate. This entire assembly bears on the cut stone masonry abutments and allows movement to compensate for expansion and contraction of the structure due to temperature and loading changes.

Throughout the structure are several bracing systems, including the bottom lateral braces attached to the floor beams, the top lateral braces connected to the Phoenix columns, and the portal bracing attached to the portal struts. These braces are round bars with threaded connections for adjustments. There are upper and lower portal struts attached to the Phoenix columns at the portals of the bridge. These struts are Phoenix sections. All the braces and struts are designed to maintain the squareness of the structure.

## V. Subsequent History

The bridge at Christiana has undergone several maintenance and improvement programs since its construction, beginning in 1907 when the bridge was modified to allow a trolley line crossing. The rails for the trolley car were supported on 10-inch I-beam supports. Seven-inch channel beams were then used for support of the I-beams.

The bridge thus had the capability to handle trolley traffic.[31]

In 1937, as the Pennsylvania Railroad Company began to implement its electrification plan for the Harrisburg line, the Christiana Bridge again was modified. Catenary attachments were added for the overhead electric lines of the railroad, and a corrugated metal protection screen was constructed on the bridge for traffic and pedestrian safety.[32]

A pedestrian sidewalk was proposed in 1941 for the bridge, but for unknown reasons that was not constructed. Pedestrian traffic continued to be carried by the traffic lanes on the bridge.[33]

In 1952, repairs to the structural steel became necessary and the plans were developed accordingly. Lateral rods were installed between floor beams for additional support, and stiffening plates were added between the hanger bolts. The plans also show a 2-inch bituminous surface over the timber deck, which may have been previously constructed.[34]

By the 1960s, the bridge was no longer sufficient in size or strength to carry the increased traffic loadings. The only other separated grade crossings in Christiana were underpasses at Gay and High Streets, and they were also inadequate to handle the increased traffic loadings. Thus, the question of how to provide a safe railroad crossing in Christiana had become pramount for the Pennsylvania Department of Transportation and for borough residents.

The borough complained that the bridge is:

> "too narrow to accommodate two lanes of highway traffic, that it does not provide a sidewalk for pedestrian travel, and that the bridge is posted limiting its use to vehicles with weights not in excess of five tons."[35]

On March 6, 1967, the Public Utility Commission ordered the Pennsylvania Department of Transportation to:

> "make a comprehensive engineering investigation and study of the crossings in the Borough of Christiana, Lancaster County, (1) where Bridge Street crosses over and above the grade of the tracks of the Pennsylvania Railroad Company, (2) where State Legislative Route 344 crosses under the grade of the tracks of said company, and (3) where Ann Street crosses uner the grade of the tracks of the company, to determine the general nature, extent, and estimated cost of

> all work necessary or desirable to eliminate the existing dangerous conditions and to provide a safe and adequate crossing in the borough."[36]

The engineering investigation conducted in 1968 reported that the least costly alternative, and the one that would provide the best traffic service, would be the replacement of the existing bridge at Bridge Street.[37]

The Bridge Street structure was closed to vehicular traffic in 1971 due to structural inadequacy and since has been used only as a pedestrian crossing.

Before the bridge could be replaced with a new structure, a Preliminary Case Report was prepared, evaluating the feasibility of preserving or maintaining the existing structure. It was determined tha it was not structurally feasible to relocate the structure and a Memorandum of Agreement was prepared to mitigate the adverse effect of demolition of the bridge which had been determined eligible for the National Register of Historic Places. This report has been compiled to fulfill that agreement.

Footnotes

1 William H. Shank, Historic Bridges of Pennsylvania, 3rd ed. (York, Pa.: American Canal & Transportation Center, 1980), p. 2.

2 Ibid, p. 39.

3 Franklin Ellis and Samuel Evans, History of Lancaster County, Pennsylvania, with Biographical Sketches of Many of Its Pioneers and Prominent Men (Philadelphia: Everts and Peck), 1883), pp. 1032-33.

4 H. M. J. Klein, A History of Lancaster County, Pa. vol. 1, (Lewis Historical Publishing Company, 1924), p. 49.

5 Shank, Historic Bridges of Pennsylvania, p. 39.

6 Carl Condit, American Building (Chicago: University of Chicago Press, 1968), pp. 99, 100.

7 Shank, Historic Bridges of Pennsylvania, p. 34.

8 Condit, American Building, pp. 99, 101.

9 Ibid, p. 99.

10 David Plowden, Bridges: The Spans of North America (New York: Viking Press, 1974), pp. 61, 62.

11 Ibid, p. 67.

12 Engineering News and American Contract Journal, February 13, 1886, p. 111: "The Pennsylvania Railroad Co. express satisfaction with the new principal adopted by them some time ago of constructing their new bridges of plate-iron girders and stone arches wherever possible. Twelve bridges on the New York and Belvidere division were rebuilt on this plan last year."

13 Ellis and Evans, History of Lancaster County, pp. 1033-35.

14 Ferdinand L. Molz, "A History of the Christiana Machine Company, 1863-1920," Journal of the Lancaster County Historical Society 76 (1972): 207.

15 Klein, A History of Lancaster County, p. 48.

16 George H. Burgess and Miles C. Kennedy, Centennial History of the Pennsylvania Railroad Company 1846-1946 (Philadelphia: The Pennsylvania Railroad Company, 1949, pp. 439-39.

Footnotes, cont'd.

17 W. B. Wilson, History of the Pennsylvania Railroad Company (Philadelphia: Henry T. Coates & Co., 1895), vol. 1, p. 76.

18 The old route and the proposed new route can be seen in Map of the Pennsylvania Railroad, "Philadelphia Division" (1976), v. 2.

19 Pennsylvania Railroad Company, Plan No. 5259.

20 Patent of Phoenix Column to Samuel Reeves, for improvement in the construction of columns, shafts, and braces. June 17, 1862.... Accession No. 916, Phoenix Steel Corporation, Eleutherian Mills Library; Hagley, Delaware.

21 Pennsylvania Railroad Company, Plan No.5259.

22 Ibid, Plan No. 5259a, "Masonry Plan."

23 Lancaster County Courthouse, Land Records Division Record Book, 131:444; 13M:279; 13Q:250; 13Q:280; 13Y:12; 141:218; 14L:272; 14L:558; 14R:27; 14U:172; 15H:280.

24 See, for example, the deed made by Nathaniel Gillespie and Lydia, his wife, on June 5, 1890. Record Book, 13Q:281.

25 A typical example is the deed made by Sarah McClure and her husband, Joseph, on December 8, 1893. Record Book, 14:559.

26 Record Book, 14L:273.

27 Record Book, 14U:173.

28 Wilson, History of the Pennsylania Railroad Company, p. 76.

29 Walter R. Miller. Paper read before the Octorara Valley Historical Society, May 14, 1970, p. 13.

30 Pennsylvania Railroad Company, 49th Annual Report (1895), p. 104.

31 Pennsylvania Railroad Company, Plan No. 5259D.

32 Ibid, Plan No. 5259.

33 Ibid.

34 Ibid, Plan No. 5259D.

Footnotes, cont'd.

35 Borough of Christiana v. the Pennsylvania Railroad Company, Department of Highways of the Commonwealth of Pennsylvania, and County of Lancaster. Pennsylvania Public Utility Commission Complaint Docket No. 18241, March 6, 1967.

36 Ibid.

37 "Synopsis of Engineering Investigation Report," Appendix C to "Historical Preservation Procedures, L.R. 344, Section 7, Christiana Borough: Determination of Effect: Preliminary Cast Report," Pennsylvania Department of Transportation, Engineering District 8, Harrisburg, December 17, 1980.

38 Letter from Fred Bowser, Director, Bureau of Highway Design, to Robert Mueser, District Engineer, District 8-0, Pennsylvania Department of Transportation.

# A P P E N D I X

## LIST OF DEEDS CONVEYING LANDS IN CHRISTIANA TO THE PENNSYLVANIA RAILROAD COMPANY

Lancaster County Courthouse. Land Records Division.

Grantee Index to Deeds, Series 1 and 2.

Grantee: Pennsylvania Railroad Company; location of property: Christiana

| Grantor | Date of Deed | Location of Deed |
|---|---|---|
| George M. Knight | April 1, 1890 | Vol. 13 I p. 444 |
| Martin Oatman | April 25, 1890 | Vol. 13 M p. 279 |
| Samuel Irwin Sr. and wife | May 29, 1890 | Vol. 13 Q p. 250 |
| Nathan Gillespie and wife | June 5, 1890 | Vol. 13 Q p. 280 |
| Brinton Walter and wife | December 10, 1891 | Vol. 13 Y p. 12 |
| Thomas R. Hirst | May 17, 1893 | Vol. 14 I p. 218 |
| William P. Brinton and wife | October 11, 1893 | Vol. 14 L p. 272 |
| Sarah McClure and husband | December 8, 1893 | Vol. 14 L p. 558 |
| Brinton Walter and wife | February 28, 1894 | Vol. 14 R p. 27 |
| Mary B. Brinton | January 14, 1895 | Vol. 14 U p. 172 |
| Rachel J. Hall | October 12, 1896 | Vol. 15 H p. 280 |

George M. Knight and wife, Margaret, to the Pennsylvania Railroad Company. April 1, 1890. Land in Christiana.

Lancaster Co. Courthouse. Land Records Division. Record Book 131, p. 444.

Amount of payment: $2,000

Land conveyed: 211/1000 acre, beginning at Gay Street. Inclusive of 24/1000 already in tenure of PRR. Premises formerly of Samuel Slokum.

No waiver of damages. No mention of line.

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Eliza Ann Oatman to the Pennsylvania Railroad Company, April 25, 1890. Land in Christiana.

Lancaster Co. Courthouse. Land Records Divlsion. Record Book 13M, p. 279.

Amount of payment: $950.

Land conveyed: 10,020 square feet. Property begins at Elizabeth Street. No waiver of damages. No mention of fine.

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Samuel Irwin, Sr. and Matilda, his wife, to the Pennsylvania Railroad Company. May 29, 1890. Land in Christiana.

Lancaster Co. Courthouse. Land Records Division. Record Book 13Q, pp. 250-251.

Amount of payment: $2,500.

Land conveyed: land and buildings, 87-1/2 perches. Land begins at Elizabeth Street.

No waiver of damages.

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Nathaniel Gillespie and Lydia, his wife, to the Pennsylvania Railroad Company. June 5, 1890. Land in Christiana.

Lancaster Co. Courthouse. Land Records Division.
Record Book 13Q, pp. 280-281.

Amount of payment: $3,000.

Land conveyed: 160/1000 acre beginning at Gay Street, formerly part of Isaac Bromell's land.

Contains clause to construct fence.

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Brinton Walter and wife, Louisa D. Walter, to the Pennsylvania Railroad Company. December 10, 1891. Land in Christiana.

Lancaster Co. Courthouse. Land Records Division. Record Book 13Y, p. 12.

Amount of payment: $300.

Land conveyed. Two lots. #1 begins at High St. 213/1000 acre inclusive of 120/1000 already in tenure of PRR. #2 begins at Gay Street. 213/1000 acre inclusive of 138/1000 already in tenure of PRR. Formerly owned by Arabel C. Walker and Samuel Walker and wife.

No waiver of damage clause.

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Thomas R. Hirst and Sara W., his wife, to the Pennsylvania Railroad Company. May 17, 1893. Land in Christiana.

Lancaster Co. Courthouse. Land Records Division. Record Book 141, pp. 218-220.

Amount of payment: $180.

Land conveyed: Strip or piece of land beginning at a stake in the centerline of the railroad of the said Company as now constructed and in the middle of Ann Street.

360/1000 acre inclusive of 253/1000 of an acre already in the tenure of the Railroad Company. Part of Joseph D. Pownall's estate.

Thomas Hirst agrees to build a fence. Releases Railroad Company from claims for damages

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William P. Brinton of the village of Christiana and Mary C., his wife, to the Pennsylvania Railroad Company. October 11, 1893. Land in Christiana.

Lancaster Co. Courthouse. Land Records Division. Record Book 14L, pp. 272-274.

Amount of payment: $37.50

Land conveyed: All that certain lot or piece of ground situate in the Village of Christiana aforesaid bounded and described as follows viz.: Beginning at a stone in the middle of a public road at a corner of the land of the said Railroad Company late of Samuel Irvin, Senior, and extending thence along the middle of said road north...to a stake at corner of land of the estate of Louis Brinton deceased...thence northeast to a stake by other land of the said William P. Brinton...southeast...to a stone at corner of the aforesaid land of the said Railroad Company...south to the place of beginning. Containing 74/1000 acre. Part of a piece or parcel of land containing fourteen acres and fifteen perches which Samuel Brinton and wife by indenture...(December 12, 1856) conveyed in fee to William P. Brinton.

p. 273 MENTION OF BRIDGE:

"And the said William P. Brinton for himself and his heirs...doth hereby release and discharge the said The Pennsylvania Railroad Company their successors and assigns from all claims, demands, payments of money, and right to compensation for or on account of any and all damages by reason of the construction of embankments for approaches to an overhead bridge over the said Railroad on the line of the said public road which crosses the railroad aforesaid near the above described premises."

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Sarah McClure and husband, Joseph McClure, to the Pennsylvania Railroad Company. December 8, 1893. Land in Christiana.

Amount of payment: $3500

Land conveyed: All that certain lot or piece of land and the buildings and improvements thereon erected situate in the Village of Christiana. Beginning at a stake in the northeastern line of land of the said Railroad Company and in the middle of Maple Street and extending northwest... .

424/1000 acre. Land formerly of James A. Reed and Lydia, his wife.

Waiver of damages: And the said Sarah McClure and Joseph McClure for themselves, their heirs (etc.)...do hereby release and discharge the said The Pennsylvania Railroad Company...(from all claims for damages) ... by reason of the location and construction of a railroad, tracks, sidings, or appurtenances upon or over said above described lot or piece of land.

Lancaster Co. Courthouse. Land Records Division. Record Book 14L, pp. 558-559.

Brinton Walter and wife, Louisa D., to the Pennsylvania Railroad Company. February 28, 1894. Land in Christiana.

Lancaster Co. Courthouse. Land Records Division. Record Book 14R, p. 27.

Amount of payment: $2,932.50

Land conveyed: 634/1000 acre beginning on Maple Street. Formerly partly owned by Thomas Greist and wife and partly by Ambrose Pownall and then James D. Reed.

Land subject to and charged with sume of $567.50; interest to be paid to Lydia A. Reed, widow of James D.

Waiver of damages caused by RR.

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Mary B. Brinton, widow of Charles E. Brinton, to Pennsylvania Railroad Company, January 14, 1895. Land in Christiana.

Lancaster Co. Courthouse. Land Records Division. Record Book 14U, pp. 172-173.

Amount of payment: $75.00

Land conveyed: 13/1000 acre. Land begins at land conveyed by William P. Brinton and wife, October 11, 1893.

p. 173 MENTION OF BRIDGE:

Mary P. Brinton releases the PRR from damages "by reason of the taking and occupying of the piece or parcel of land above described for embankments or approach to overhead Bridge or by reason of changing the grade of the public road crossing the same."

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Rachel T. Hall to the Pennsylvania Railroad Company, October 12, 1896. Land in Christiana.

Lancaster Co. Courthouse. Land Records Division. Record Book 15H, p. 280.

Amount of payment: $1,750.

Land conveyed: Land and buildings. Property begins at Elizabeth St. 7400 sq. ft.

Releases company from claims for damages by construction of tracks, etc. "or by reason of the location and construction of a stree through, over, across, and upon same."

Joseph D. C. Pownall and wife, Mary H.S., to the Pennsylvania Railroad Company. February 21, 1893. Land in Sadsbury Township.

Lancaster Co. Courthouse. Land Records Division. Record Book 14E, pp. 565-567.

In consideration of the sum of hundred dollars.

"All that certain strip or piece of land situate in the Township of Sadsbury...bounded and descreibed as follows viz.: Beginning at a stone in the line of land late of William P. Brinton at the southeast corner of a certain strip of land conveyed to the Pennsylvania Railroad Company by the said Joseph D. C. Pownall and wife by deed dated March seventh 1891 and extending thence north westward by other land of the said Railroad Company.

... Thence South eastward by other land of the said Joseph D. C. Pownall parallel with the line established for the centerline of the new location of the railroad of the said Company.

Once acre and six hundred and forty four one thousandths of an acre: 1 644/1000. Being part of a tract of one hundred and seventy four and one half acres of land which Joseph C. Dickinson and wife and others by Indenture bearing date the first day of April 1845...granted... to Moses Pownall in fee."

(Joseph is son of Moses.)

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And the said Joseph D. C. Pownall (and heirs etc...) doth hereby convenant... that (he) "will at his and their own proper expense construct and maintain a good and substantial fence on the line between the land hereby granted and his remaining land adjoining the same one the east."

Joseph Pownall and heirs "doth hereby release and discharge the said The Pennsylvania Railroad Company, their successors and assigns from all claims, demands, payment of money and right to compensation for or on account of any and all damages by reason of the location and construction of a railroad, tracks, sidings, or appurtenances upon or over the said above described strip or piece of land."

(Standard waiver of claims for damages.)

Benjamin H. Pownall of the township of Sadsbury and Philena C., his wife, to the Pennsylvania Railroad Company. April 17, 1893. Land in Sadsbury Township.

Amount of payment: $1,610.30.

Land conveyed: All that certain strip or piece of land with the dwelling house thereon erected situate in the Township of Sadsbury.

Beginning at a stone at the northwest corner of a certain strip of land conveyed to the Pennsylvania Railroad Company by Margaret C., Brown, Executrix, under the will of Lindley T. Brown, deceased, by deed dated June 17, 1891, distant seventy feet southwestward from the centerline of the Pennsylvania Railroad... .

Landowners bordering property and also adjacent to PRR: Mary B. Hopkins and Joseph Hopkins.

Property contains 3- 818/1000 acres inclusive of 1- 117/1000 acres already in the tenure of the PRR. Part of tract of estate of Joseph D. Pownall. Pownall and heirs agree to construct and maintain "a good and substantial fence on the line between the land hereby granted and his remaining land."

Standard waiver of damages incurred in construction of RR line.

Lancaster Co. Courthouse. Land Records Division. Record Book 14F, pp. 473-475.

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Deed of Malvan H. Pownall, widow of Joseph D., to PRR on April 22, 1893. Record Book 14F, p. 470.

Releases claim in land conveyed in previous deed by Benjamin H. Pownall. Consideration of $1.00.

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